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ECONOMIC ANALYSIS OF FA ROUTE NO. 42 FROM VAN NORMAN TO FORT PECK

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FOREWORD

This report has been prepared for the purpose of assembling and presenting data concerning the estimated cost of constructing the portion of FA Route No. 42 between Fort Peck and FA Route No. 15, the amount of traffic that is expected to use the highway, the probable amount of revenue from this traffic, and the value of benefits to traffic that would result from the construction of the highway.

It is possible, by comparing the various economic factors, to determine the degree of financial solvency and economic solvency that would apply to the route.

DESCRIPTION OF ROUTE

Federal Aid Route No. 42 begins at a junction with FA Route No. 15 near Van Norman and extends northward along the east shore of the Fort Peck Reservoir to the Fort Peck Dam which is used for the Missouri River crossing, and then it proceeds through the town of Fort Peck to a junction with FA Route No. 1 in Glasgow. The section from the Fort Peck Dam to Glasgow has been constructed to an oiled standard, and this analysis is concerned only with the unconstructed section beyond the dam.

Completion of the route will require construction of about 53.5 miles of roadway. The proposed location will cross open and undeveloped country, except near the northern end where there is a small amount of ranching. For the most part, the route crosses the prevailing drainage and it borders on hilly country adjoining the reservoir. Near the northern end, the route replaces or parallels existing county roads; however, the southern half of the area is practically devoid of roads of any type.

The Fort Peck Dam provides a crossing of the Missouri River that is used to only a limited extent by local and recreational traffic at the present time. Completion of a through highway connecting with the dam would permit greater use of the potential value of this facility.

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DEVELOPMENT

Throughout its length, the route traverses very low grade land. It is predominantly suitable only for grazing; however, a small amount of farming is conducted near the northern end. Some irrigated land borders on the Missouri River below Fort Peck Dam, and the Bureau of Reclamation plans to irrigate additional land in this region by means of pumping plants.

312

The Federal government plans to construct recreational facilities along the perimeter of the reservoir at an approximate cost of $2, 000, 000. 00. This highway will serve two principal sites at Bear Creek and Rock Creek. Full development and use of these facilities is dependent on the contruction of adequate roads which will provide access to these points.

The southern half of the route is practically devoid of development. The adjacent country is used for grazing but has little permanent culture. It is expected, however, that the construction of a highway through the region will encourage a limited amount of settlement. This will probably be confined to an occasional ranch and the usual commercial development attracted to a new highway, such as filling stations, taverns and cafes.

CONSTRUCTION

The traffic volume on this highway is expected to be relatively small, but there should be a normal amount of heavy trucks which will find it to their advantage to use the uncongested highway which permits greater speed. The presence of heavy trucks will require construction of the roadway to adequate standards. Estimated construction costs for an oiled surface are presented below:

ESTIMATED CONSTRUCTION AND MAINTENANCE COSTS

Roadway and Bridges	$1,600,000
Survey, Plans & R/W	85,000
Admin and Overhead	84,250
Sub-Total	$1,769,250
Plus: 10% for Contingencies	176,925
Total Initial Construction	$1,946,175
Resurfacing at End of 15 years	535,000
Total Construction Cost	$2,481,175
Annual Amortized Cost at 2% Interest over 30 years	$ 110,660
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State's Share of Annual Cost with Federal Aid	$ 47,296
Annual Maintenance Cost	40,125
TOTAL ANNUAL COST TO STATE	$ 87,421

TRAFFIC

At the present time, there is no local traffic at the southern end because of the absence of roads. As the route extends northward there is a gradual increase in the local traffic, but it is only at the northern end that there is any traffic of interest. In the vicinity of the dam the recent counts show 50 vehicles per day. The next count is located at a point about 7 miles south of the dam which shows 25 vehicles per day. The count diminishes to 4 vehicles per day at another point about 21 miles south of the dam. The traffic in the vicinity of the dam is probably evenly divided between local and recreational traffic. There is a small amount of traffic on other roads in this general region, and it is probable that some of this local traffic will divert to the new highway. It is estimated that the local traffic will average 35 vehicles per day for the entire route during its service life.

Recreational traffic will constitute a major portion of the traffic on this highway. This category will include motorists visiting the dam and the recreational sites at Bear Creek and Rock Creek. The greater portion of the traffic is expected along the northern end of the route between the recreational sites and the dam. Some traffic will originate in the eastern and southeastern section of the State, however, it is believed that this traffic will not use the new highway entirely. Because of the shorter distance involved, it is probable that some of the traffic will prefer to cut across to the highway via FAS Route No. 252 through Circle and Weldon and connecting county roads. Future average daily recreational traffic is estimated at 37 vehicles per day. The traffic during the summer months will naturally be much higher, however, when spread over a yearly average, the estimate of 37 vehicles per day appears to be liberal.

Origin-Destination Surveys, taken at various points in this section of the State, were analyzed to determine the number of through vehicles that could be expected to use the new highway. The greater part of this traffic originated along a desire line from Glasgow through Circle, Glendive and points east and southeast. This traffic would find the travel distance about 3 miles shorter through Circle and Wolf Point to Glasgow and points west, rather than over the route from Circle to Van Norman and north over the new highway. It is believed that the majority of the traffic would prefer to use the shorter and more populated route; however some of the tourist traffic would probably prefer to use the longer route in order to visit the Fort Peck Dam enroute. A portion of the commercial traffic would also find it advantageous to use the longer route because of less congestion and faster safe speeds. Analysis of all factors involved places the traffic at a future average of 40 vehicles per day of through traffic.

Local, recreational and through traffic is expected to equal a total of 112 vehicles per day during the service life of the construction.

REVENUE FROM TRAFFIC

Traffic using this highway pays for its support by means of the Motor Fuel Tax and the Motor Vehicle Use Tax, both of which are credited to the State Highway Fund. Detailed computations show that the State Highway Department, under the most favorable allocation, would receive about $0. 00738 per vehicle mile of traffic on this highway. Local and recreational traffic would contribute $10, 147. 00 per year and through traffic would contribute $5, 997. 00 per year.

It is customary in an analysis of this type of exclude the revenue from through traffic since this traffic is diverted from other highways that need the revenue to maintain their own solvency. Strict application of this principle would prevent the addition of any new routes in the State since there is insufficient revenue at the present time to support the present State highway systems without adding extra mileage. It might also operate to the detriment of a worthy new route which would be excluded because all existing revenue was already apportioned to existing routes, regardless of their value.

In order to give favorable consideration to this highway, all revenue from the traffic using the route is credited to the route, regardless of the type of traffic. The total revenue that would be available to apply on construction and maintenance costs is equal to $16, 144. 00 per year.

BENEFITS TO TRAFFIC

Construction of a new highway on this location would provide certain definite benefits to the traveling public. It would shorten the distance for local and recreational traffic by about 3. 5 miles. Through traffic would enjoy a total savings of about 30. 0 miles in the travel distance between origin and destination. The total value of distance savings has been computed at $28, 045. 00 per year.

Local and recreational traffic would also enjoy an improvement of roadway surface from present unimproved roads to an oiled surface. This would amount to a savings of $16, 910. 00 per year. There would be no benefit to through traffic since these vehicles would be operating on oiled roads in either case.

Other benefits would include improvement of alignment, grade, and rise and fall, and elimination of traffic stops. The value of these savings has been computed at $3, 004. 00 per year.

The foregoing benefits constitute savings in vehicular operating costs and amount to $47, 949. 00 per year.

Additional time savings will result from the shorter distances and faster safe speeds permitted by the improved roadway. The savings are very evident to commercial traffic and result in reduced operating time for equipment and less driver's wages per trip. The savings to the average passenger car operator are not so pronounced; however, the savings do exist on a reduced scale.

The value of the time savings has been computed at $24, 640. 00 per year. The total of all benefits equals $72, 589. 00 per year.

CONCLUSIONS

The primary objective of an economic analysis is to determine, in advance of construction, the approximate degree of financial and economic solvency that could be anticipated on completion of the highway. Financial solvency depends on the amount of revenue that would be received from traffic on the highway and which could be applied against the estimated annual amortized construction and maintenance costs. Economic solvency depends on the relationship between these costs and the benefits to the traveling public; i. e., whether the value of benefits would be sufficient to justify the necessary investment in construction and maintenance. The following table presents a comparison of these factors:

COMPARISON OF ECONOMIC FACTORS

$$\text{Financial Solvency - } \frac{\text{Revenue} \quad \$16,144}{\text{Net Cost to State} \quad \$87,421} \text{ Ratio -0.1846}$$

$$\text{Economic Solvency - } \frac{\text{Benefits} \quad \$72,589}{\text{Net Cost to State} \quad \$87,421} \text{ Ratio -0.8303}$$

Remarks:

1. For each $1.00 invested by the State Highway Department in constructing and maintaining this highway, only $0.18 could be expected in revenue to meet these costs.

2. Each $1.00 invested in construction and

maintenance by the State Highway Department would provide benefits to the traveling public equal to $0. 83.

3. Annual maintenance costs would equal $40, 125. 00 per year, and the revenue of $16, 144. 00 per year would be only 40% of the amount required to pay the maintenance costs.